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(71) Applicant *(for all designated States except US)*: **TRACKDALE LTD** [GB/GB]; The Technology Centre, Station Road, Framlingham Suffolk IP13 9EZ (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **BURT, Michael G.** [GB/GB]; Glebe Corner, Kingston Road, Woodbridge Suffolk IP12 4AY (GB).

(74) Agents: **READ, Matthew** et al.; Venner Shipley LLP, 20 Little Britain, London London EC1A 7DH (GB).

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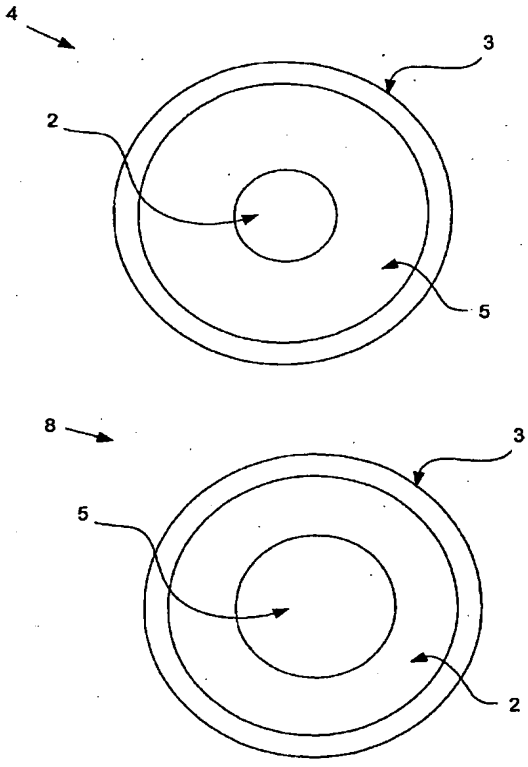
(54) Title: COMPOSITE QUANTUM DOT STRUCTURES



(57) Abstract: A composite quantum dot structure 4 comprises a charge carrier confinement region, such as a quantum dot 2, a barrier 5 and an electrically conductive layer 3. This structure allows the dimensions of the conductive layer 3 to be substantially independent of the size of the region 2, so that the dimensions of the region 2 can thus be selected in order to achieve desired optical properties, while the electrically conductive layer 3 can be of sufficient thickness to ensure that it can be reliably deposited. The structure may also include a cladding layer 7 (Figure 4) to compensate for any lack of chemical affinity between the barrier 5 and conductive layer 3. An ensemble of such structures be provided in which the quantum dots 1 have various radii but the dimensions of the conductive layers 3 and the overall dimensions of the structures are substantially uniform, e.g. for use in an amplifier configured to amplify light of various wavelengths.

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